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# *the* **ILLINOIS ENGINEER**



The Society Extends  
Best Wishes For The  
Holiday Season To Its  
Members And Friends

THE ILLINOIS ENGINEER, DECEMBER, 1954—VOLUME XXX, NO. 12

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Affiliated with the National Society of Professional Engineers

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ILLINOIS ENGINEER: W. A. OLIVER, Editor-in-Chief; H. E. BABBITT, Associate Editor



# Of Interest to I. S. P. E.

## THE ILLINOIS ENGINEER—THIS MONTH

### Secondary Education for Prospective Engineers

On October 17, 18 and 19, last, the Engineering Manpower Commission of Engineers Joint Council, the Scientific Manpower Commission, and the Thomas Alva Edison Foundation held a joint conference on the topic, "Elementary and Secondary Education and the Survival, Strength, and Growth of the United States." This is a matter that is of important interest to engineering educators, to engineers in the field, to parents, and to citizens.

The philosophy of education which has been developing in our secondary schools during recent years should be a matter of grave concern to everyone. Science, Mathematics, and English, written and spoken, are given very little if any encouragement in the high schools. Courses to make "happy, contented" citizens and courses to train for immediate hand and head skills are to the fore. Whether the "happy, contented" citizen can reason logically or express himself intelligibly seems to be of little concern.

The United States is technologically far in advance of Russia at the present time but Russia is training engineers, scientists, and technicians at a much more rapid rate than we are. In the long view if this trend continues it can have serious results as far as the welfare of the West is concerned.

However, the EMC-SMC-Edison Foundation Joint Meeting of last October should be of some encouragement to those who recognize that the problem exists. It indicates that something constructive is being done about it.

The more specific goals of the conference were stated as follows:

(1) Recognize that the elementary and secondary school science and mathematics teachers are in a pivotal position with respect to the survival, strength, and growth of the United States.

(2) Develop a public, teacher, and student acceptance of an elementary and secondary curriculum that gives engineering and science an emphasis commensurate with their importance to a constantly expanding, competitive industrial economy.

(3) Encourage qualified students to consider careers, including teaching in science and engineering and to develop their individual capacities for originality and leadership in their specialties, as well as in the affairs of industry, education and government; and

**70th Annual Meeting**  
**Hotel Faust, Rockford**  
**March 31, April 1 and 2, 1955**

## The Christmas Story

Second Luke: 4-14

(King James Version)

And Joseph also went up from Galilee, out of the city of Nazareth, into Judæa, unto the city of David, which is called Bethlehem (because he was of the house and lineage of David). To be taxed with Mary his espoused wife, being great with child. And so it was, that, while they were there, the days were accomplished that she should be delivered. And she brought forth her first born son, and wrapped him in swaddling clothes, and laid him in a manger; because there was no room for them in the inn. And there were in the same country shepherds abiding in the field, keeping watch over their flocks by night. And, lo, the angel of the Lord came upon them, and the glory of the Lord shone round about them: and they were sore afraid. And the angel said unto them, Fear not: for behold, I bring you good tidings of great joy, which shall be to all people. For unto you is born this day, in the city of David, a Saviour, which is Christ the Lord. And this shall be a sign unto you: Ye shall find the babe wrapped in swaddling clothes, lying in a manger. And suddenly there was with the angel a multitude of the heavenly host, praising God, and saying, Glory to God in the highest, and on earth peace, good will toward men.

(4) Take the necessary steps to insure an understanding, by all students of our industrial economy, of the historical position of technology in this economy, and its international impact.

Are you working to encourage the study of mathematics, science, and English in your local high schools?

W. A. OLIVER, Editor

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## READ THE ADVERTISEMENTS

### SUBSCRIPTION RATES

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## October 20, 1954 at Lake County



National and State Officers considered the problems of the Society at a Lake County Chapter meeting on October 20, 1954. Left to right in the photograph: Lee Osborn, National Director; P. E. Roberts, Executive Secretary of the State Society; I. R. Lietzke, President, Lake County Chapter, and V. E. Gunlock, Vice President, N.S.P.E.

### ENGINEER-ARCHITECT RELATIONS AT DuKANE

The controversial relationship between the architect and the professional engineer was discussed in an amicable manner at a meeting of DuKane Chapter on Thursday, November 18 by Montgomery M. Orr, partner in the architectural firm of Frazier and Raftery of Geneva. The substance of Mr. Orr's talk was that both professions have their important role in the economy of building construction.

The chapter elected officers for 1955 as follows: George M. Booth, president; Noel Thomas, vice president; Richard Thornton, secretary-treasurer.

### CAPITAL CHAPTER HOLDS "SPLENDID PROGRAM"

The October 26, 1954, meeting at the Mill had just that. James Christensen, superintendent, Bureau of Criminal Identification and Investigation, Illinois Department of Public Safety, presented 28 members and guests of the Chapter with an exceptional discussion of police problems in that Bureau.

*From Capital Chapter Chatter*

### CHICAGO CHAPTER ANNOUNCES DATE OF ANNUAL BANQUET

The Chicago Chapter will hold its First Annual Banquet in the Walnut Room of the Bismarck Hotel on

Thursday, January 13, 1955. Installation of 1955 Chapter officers will be followed by a talk by Mr. Andre Mouton, Midwest Manager of the New Orleans Port Authority. The announcement says that, "He is a speaker of international reputation and it is said that his stories 'roll 'em' in the aisles."

The famous "Round Towners" quartet of male voices will furnish the musical portion of the entertainment. George DeMent will be master of ceremonies. Tickets are six-fifty a copy and can be had from Chapter President K. C. Hoeglund. Please send in your order before December 30. All members of I.S.P.E. are invited.

From past performance as exhibited at the N.S.P.E. convention in 1948 and the Centennial of Engineering in 1952, this will be a gala event and one you will thoroughly enjoy. Plan to attend.

### NORTHWESTERN ANNOUNCES GAS DYNAMICS SYMPOSIUM

The Department of Mechanical Engineering in the Technological Institute of Northwestern University has expanded its facilities through the creation of a Gas Dynamics Laboratory. Now almost one year old, the laboratory has been working on fundamental problems underlying the operation of gas turbines, jet propulsion and rockets. Financed by the University, the laboratory serves three main functions in providing: 1) research work for graduate students studying toward Master of Science and Doctor of Philosophy degrees; 2) instruction



in the fields of compressible fluid flow and high velocity combustion processes; 3) unclassified research under contract from private industry and/or governmental groups; 4) the organization of post graduate symposia and conferences for scientists and engineers interested in phenomena dealing with high velocity flow processes.

So far the emphasis in research has been in the field of turbulent combustion such as that encountered in jet engines. However, preparations are under way to study the combustion instability problems encountered in rocket motors. In the field of instruction four courses for day and three for night offering have been set up and are being taught by the department. A symposium to discuss aerothermochemistry has been announced and is scheduled for August 22, 23, 24, 1955.

### HIGHWAY CONFERENCE TO BE HELD IN URBANA

The 41st Illinois Annual Conference on Highway Engineering is to be held at the University of Illinois in Urbana on March 1-3, 1955. Details of the program are to be announced later.

### CHICAGO CHAPTER CONSIDERS ATTENDANCE PROBLEMS

(From Allen Drachman, Secretary)

At their meeting of October 14, last, under the leadership of Chapter President K. C. Hoeglund, ways and means were considered of improving the activities and organization of Chicago Chapter.

The following points were discussed, pro and con:

1. Splitting the Chapter membership into suburban or other groupings for ease of attendance.
  - a. Might get more younger men out with meetings after supper—not dinner-meetings.
  - b. Might not be good to split into smaller groups because the group attending meetings now is so small.
  - c. Facilities in local areas might be much cheaper—which would encourage the attendance of the younger men.
2. What are the objectives of Society?
  - a. To be active and effective organization devoting its entire efforts to the professional ethical, economic and social aspects of engineering.
  - b. Engineers must not get so engrossed in the economic aspects (that is, the pay envelope) that we neglect professional aspects.
  - c. Social aspect of the meetings will help engineers to develop their skills by helping them to express themselves with more poise.

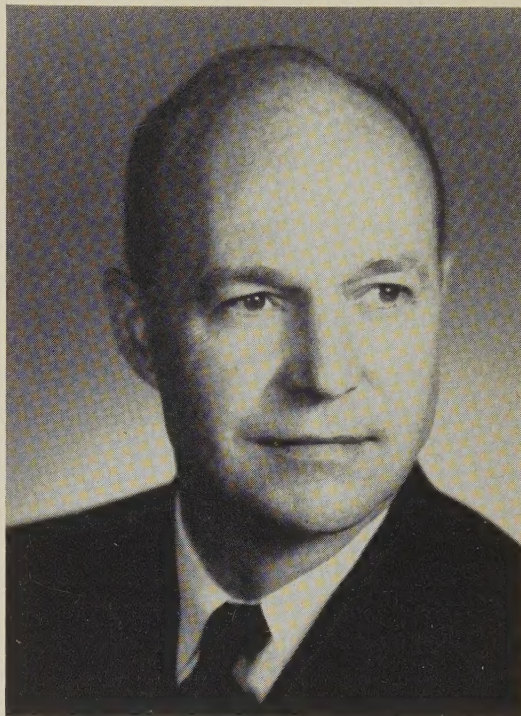
### COST OF LIVING INDEX

The cost of living correction factor to be applied to the I.S.P.E. Schedule of Minimum Fees and Salaries is based upon the Consumer Price Index of the 1947-49 average as determined by the Bureau of Labor Statistics. On the 1947-49 base the correction factor for October, 1954, is 115.0.

For those who are still using the old schedule the correction factor is 192.0 based upon the 1935-39 average.

### W. H. WISELY ACCEPTS TOP POSITION WITH A. S. C. E.

Mr. W. H. (Pete) Wisely, long time member and friend of the Illinois Society of Professional Engineers, has accepted the position of Executive Secretary of the American Society of Civil Engineers and will take over his new duties in New York City in early 1955.



W. H. Wisely

For the past twelve years Mr. Wisely has been Executive Secretary and Editor of the Federation of Sewage and Industrial Wastes Association. Prior to that time he had served with the Division of Sanitary Engineers, Illinois Department of Public Health, and as Engineer-Manager of the Urbana-Champaign Sanitary District. Concurrently he has been a Lecturer in Sanitary Engineering at the University of Illinois. He is author of numerous technical and professional papers and articles and has been an active member of the principal engineering societies of his field of specialization as well as of those of a more general professional nature.

He became a member of the Illinois Society of Professional Engineers in 1928 and of N.S.P.E. in 1947. He is a Past President of Capitol Chapter and has served on many committees during the years of his membership. For the past ten years he has been chairman of the Publications Committee.

The Illinois Society of Professional Engineers expresses regret over the loss of a loyal member and friend but it, also, desires to extend best wishes to both Mr. and Mrs. Wisely for continued success in the field of their new activity.

*Next month, a paper by President C. W. Klassen, "What's the Outlook for Sanitary Engineers?"*



## Obituaries

### Victor H. Kasser

Victor H. Kasser, Member N.S.P.E. and City Engineer at Elgin for forty years, died in that city on September 15, 1954.

Mr. Kasser was widely known in the Fox river valley as he had served as a consultant on engineering matters with officials of nearby towns as well as carrying on his duties for the City of Elgin.

He was affiliated with numerous civic and fraternal organizations of the city, including Elgin Rotary Club, and Elgin lodge 737, Elks. He was a charter member and past president of DuKane Chapter. He was also a member of St. Laurence Catholic church.

Born in Muscatine, Ia., Aug. 17, 1890, he moved to Elgin with his parents, Mr. and Mrs. Charles Kasser, when he was 12 years old, and has since made his home there.

Surviving besides his widow, Theresa Connor Kasser, are three sons, Charles of Elgin, Richard of Oakmont, Pa., and Edmund Kasser of Chicago, and four grandchildren. His parents preceded him in death.

### Harry Scott

Harry Scott, Member of N.S.P.E. and Lake County Chapter since 1948, died unexpectedly on Saturday, April 10, 1954, at the home of a nephew in Round Lake.

Mr. Scott was born Sept. 24, 1894, in Kewanee, Ill. He was a graduate of Kewanee high school and attended several engineering schools. He was formerly employed by the Chicago post office, Western Electric Co., Bettendorf Mfg. Co., Bettendorf, Iowa, and the Naval Air Station at Corpus Christi, Tex. For the past 10 years he had been employed as an electrical engineer at the Ninth Naval District Public Works Office, Great Lakes, where he was instrumental in improving the lighting fixtures called for by the Navy. Many of his design features were incorporated in Navy Specifications. He had done a considerable amount of design work on lighting and power installations for shore and ship berthing facilities in the Ninth Naval District.

He and Mrs. Scott did considerable travelling and he was an expert amateur photographer.

He was also a member of Lodge 159, A.F.A.M., and Post 31, American Legion, both of Kewanee. He was a World War I veteran having served as a second lieutenant in the Army.

Mr. Scott leaves his widow, Cora; a brother, Louis, and a sister, Ella, both of Kewanee.

The Illinois Society extends sympathy to the families of these cherished members whose contribution to its welfare will be long remembered.

### YOU AREN'T LICKED

What!—you've lost interest? Conditions are too difficult to overcome? Gripping about what a hard life you've had? Can't see anything but failure on the road ahead? Listen:

Milton was blind when he wrote "Paradise Lost." Gauguin gave up wealth and family to paint in loneliness and poverty. Stevenson, tubercular and bedridden, wrote stories of gay adventure. Pasteur, partly paralyzed, carried on his ceaseless war on disease. From her sickbed Florence Nightengale organized the hospitals of a nation.

Steinmetz for years could not sleep without an opiate because of rheumatic pains. Toscanini once played second fiddle in an obscure South American orchestra. Francis Parkman, who wrote two dozen large volumes of history, suffered from so many kinds of pain that he could work only a few minutes at a time.

And you—healthy, strong, having plenty of everything but *nerve*—are saying the race is only to the swift. For shame. When God looks man over, it won't be for medals—it will be for *scars*. Get into the fight, mister, and get all scarred up!

—Jerry Fleishman.

### KEYSTONE AUTO CLUB SUGGESTS NINE WAYS TO KEEP CHILDREN SAFE

The Keystone Automobile Club has issued a set of nine precautions to protect children from car accidents. Keystone's suggestions are:

1. Never leave children unsupervised in a car, even though it's "just for a minute." Never leave the motor running while parked. Take your keys with you.
2. Never start a car until you know—not just think, but know—that no children are in the way, front or back.
3. Don't allow children to stand up while riding. Teach them to sit still.
4. Don't allow babies to be carried on someone's lap in the front seat. Place babies in the rear seat, or in a baby carrier.
5. Make sure your car doors are locked so children can't open them accidentally. Teach children to leave door handles alone.
6. If children start quarreling, pull off the road and stop before trying to settle things.
7. Don't permit children to lean or reach from car windows.
8. Teach children not to touch steering wheel, gear-shift lever, rear-view mirror, or otherwise distract the driver while car is in motion.
9. Don't overload front passenger seat.

### INADEQUATE ROADS COST

"An inadequate roads system carries with it damage to farm produce on its way to market, lower property values along the right-of-way, higher insurance rates, more accidents, a loss of time because of congestion and higher automobile operating expenses," Gov. Francis Cherry of Arkansas pointed out recently to a conference of educators and engineers.

All the darkness of the world cannot put out the light of one small candle.



# Educating the Technical Graduate

W. SCOTT HILL, VICE PRESIDENT, A. I. E. E.

Manager of Technical Recruiting Service, General Electric Co.

*(Reprinted from General Electric Review)*

Industry has many processes whereby the finished product of one plant becomes the source material for another. The education and specialized training given the engineer during his college years become the material utilized by society for an important part of our way of life. Unlike the products of industry, however, the output of the college is a human being with countless combinations of abilities, training, and personal characteristics besides his background aptitude and intelligence level. Because these characteristics appear in endless variations, this subject never loses its interest—or the possibility of improvement.

My work takes me to many a college campus and among many of the best educators in the field of engineering. Often the subject turns to the way engineering students are being prepared by the colleges to meet the requirements of industry or whatever career the graduate selects. Both college and industry recognize that men are being trained to have many choices for the way they can serve society. Like a great hotel, there are countless doors that can be opened. Some lead to spacious quarters or extensive suites, some to narrow confining rooms, and some are simply service rooms or broom closets. What keys are needed for all these rooms? Some say it is best to have a separate key for each room and apartment. Others argue that more flexibility results if the hotel has more passkeys to open the doors of whole floors at once.

It is the business of the engineering educator, together with the counsel of those in industry, to study the best system of keys for our era. If asked, they would probably start by wanting to know what it is that you are trying to do with your keys and rooms. In a hotel the plan of one key fitting a specific door has considerable merit for the guests. When education is the key and industry the multiplicity of doors, the idea of a key for many different doors and opportunities begins to appeal. Suppose we speculate on a few of the factors, aside from specific curriculum subjects, that might profitably convert the single-room key to the more general passkey.

If the question were asked "Can the engineer be better prepared for industry?" the answer would be "Yes, he can." If we list the preparation that industry would like him to have, this might well include a basic four-year engineering course topped off by graduate work in a specific field, plus the physics or math of a doctorate superimposed on a liberal-arts background with a survey of economics added. Such qualifications may be deduced from the specifications to fill certain jobs. But several things are wrong: Either the average student would suffer privation before he financed all that or industry would hesitate to pay the asking price. A more practical solution is required.

Suppose the question were "Are graduates necessarily poorly prepared?" The answer is "No" because industry makes good use of them right now, and most graduates do astonishingly well. This is a tribute to the educators who have given their lives to this problem over the years.

Such are the extremes. Between them we can find many variations. Some college programs are almost standardized in pattern, with only minor departures. Others in stages between planning and practicing are raising serious questions concerning the established approach. And they are asking if the time has not come for a more general reappraisal and, presumably, some fundamental changes.

These remarks are not to be interpreted as our entering the arena reserved for the professional educator; he is much better qualified to judge how a given educational end can be achieved. However, individual opinions from industry can safely suggest a few avenues that can supplement the literal following of the prescribed professional courses of study. The student may then recognize these viewpoints as signposts to help him in the critical years as he begins his lifework.

Most science and engineering graduates find their first positions through the mechanism of college recruiting, with all its assorted variations. Industry interprets its needs through these recruiting representatives. Their opinions are not final, but they can suggest some of the factors—aside from any special curriculum—that industry takes as its beliefs of the moment.

Take the matter of liberal arts courses in conjunction with a professional course, such as some field of engineering or science. Industry knows that a four- or even five-year course prevents full treatment of the subject matter of a specialty, much less any extensive liberal arts training. Compromises are then made by the college. General Electric's view is that the undergraduate should be led if possible, and prodded if need be, on a course that gives him a reasonably firm foundation in the technical field where he is obtaining his degree. Application can be sacrificed in favor of fundamentals. Next, we urge that space be found to introduce some cultural subject matter to the end that the graduate comes out of school with some of the rough edges smoothed off. This has a threefold objective: The graduate will have some understanding of the meaning of his work in relation to society; some power to select the main issues of the day; and a realization of the influence that he can exert by the wise use of his knowledge, ability, and judgment.

President Griswold of Yale well stated the basic purpose of liberal arts when he recently wrote, "It is to awaken and develop the intellectual and spiritual powers



in the individual before he enters upon his chosen career so that he may bring to that career the greatest possible assets of intelligence, judgment, and character." It is desirable that technical graduates be exposed to the important cultural and thinking processes normally associated with the liberal-arts area.

Actually this is now being done to a greater degree than is being indicated here. When professors are alert to these broader horizons and are developed in cultural as well as technical fields, then some of this is caught by their students, often without their being aware of what is taking place. Through various college-living systems students are uniquely associated. When engineering, liberal arts, social sciences, and scientific undergraduates live, talk, and discuss together, some of the attitudes of one group develop in the other through osmosis and inspiration.

Society needs to encourage its best minds to take advantage of additional training where this will help to expand the radius of knowledge or contribute to human welfare.

For those with the financial means, intellectual capacity, and time, the graduate schools provide one mechanism for advanced specialization. The alternate is to accept industrial employment in an area where advanced work is available, thereby working and learning simultaneously. Many metropolitan locations and some of the larger industrial firms provide this.

For the purposes of these observations, let's assume that colleges are doing a capable academic job, and turn our attention to those aspects of education that are separate from the factual knowledge imparted. Here are a few characteristics that industry looks for and expects in engineering college graduates.

**Adaptability**—With all the varieties of organization structures, products, and personalities in the industrial world, one of the greatest assets for a man is the characteristic of adapting himself to any reasonable environment in which he finds himself. This does not mean sacrificing his long-range objectives or giving up his individual personality but, rather, trying to understand the new situation and promoting suggested changes gradually and diplomatically. In other words, the student should be persuaded to avoid preconceived ideas about his postcollege future so that he won't be upset by any deviations.

**Enthusiasm**—Placement authorities know that industry recruiters look for signs of keen interest in the future jobs—an easily detected quality. The only problem is that of determining sincerity. Here the college influence is often clearly visible. An inspiring professor, a college program that has stimulated the appetite for world problems, or zest for living fully, all contribute to this attitude. Cultivation of these in the student should be an automatic process of the dedicated professor.

**Using Knowledge**—Industry expects the graduate to be conditioned to meet new problems and to reason his way to sound conclusions. This means that he should

know how to investigate research to find pertinent facts, select and organize them for study, and then use that too-little-employed effort called *thinking* to come up with a decision, conclusion, or reasoned cause of action.

It is of no use to argue the old question of whether the rigors of a scientific training, study of Latin, theories of logic, or mathematics will guarantee this ability to a greater or lesser degree. Industry merely asks that something in his schooling add to his mental stature, not take away or stifle it.

**Attitude Toward People**—The places in life where the individual can turn his back on people and still make a living are fewer each year. Industry is almost synonymous with some measure of co-operation. Many of our college laboratories provide excellent fields for developing this trait, as do extracurricular activities. A willingness to go more than half way in understanding others is an important asset. A personality that attracts, not repels, others can serve as one of the great cornerstones of a successful life.

**Working Habits**—We have all seen well-trained people who have never done much with their gifts and opportunities. Modern youth, like all the preceding generations, needs to learn the necessity of doing a job well and of completing as well as initiating programs. Many college courses insist on discipline and exactness. Those remembered with gratitude are often the ones where hard tasks were undertaken, and giving them up would have been the easiest but not the wisest course. Every student should therefore have some contact with at least a few rigorous teachers.

Obstacles are always present. The practice of meeting them and somehow finding a solution is a basic condition of living. Fortunate is the graduate who has developed a pattern to meet reality, overcome its problems, and grow in the process.

**Understanding the Economics**—Industry frequently encounters graduates who fail to realize the economic relationship of their own efforts to the work of the world. What they do should in some way contribute to the store of knowledge, to production, to the training of others, or—in its broadest sense—to the satisfaction of the lives of others. In the industrial company, this economic measure is often identified as profit.

Administrators ask, "Why can't these graduates have some better understanding of our economic system?" Economics classes are taught to almost every college student. Many are effective. It's up to the educators to see that more of them accomplish the maximum result in the time available.

What industry is trying to say to educators concerning the engineer and the scientist is this . . .

Give us well-rounded men.

Cultivate habits of mind that will enable them to seek out unsolved problems, to systematically explore, and where possible to add to useful knowledge.

Give them basic tools in the form of fundamental knowledge for this task, but above all show them how to



acquire more tools for themselves as they reach the limits of their past training.

Encourage qualities of initiative and responsibility.

Make them aware of the economic evaluation society will inevitably put on their contributions.

Help them toward attitudes of cooperation with their associates in work and community because much of their lives will be spent in working with and for people.

Prepare them to better adjust to people, situations, and the changing complexities of our society.

Foster alertness to broad social trends and the implications these have to their field of work.

### POLICE RADIO—ONE QUARTER CENTURY

Police radio, a powerful weapon in the unending battle against crime, became a regular part of law enforcement just 25 years ago.

The entire concept of police work has changed since that day.

It was the speed and mobility of the automobile that made radio usable against criminals, so it was perhaps more than just a quirk of fate that the first broadcast that Saturday morning in Detroit was a list of stolen cars. It was four hours later when the first emergency call went out.

Then the voice of Dispatcher Walter Vogler came crackling into the earphones of a patrol car with word of a prowler a few blocks away. Unfortunately for the record, he escaped. It was four days later that an irate maid, trying to kick out the basement windows of her employers' home, helped make history by being the first person arrested on an emergency radio run.

Seven other arrests and a total of 114 runs that first month set the pattern. In December, 1929, the station went from 16 to 24 hours a day, seven days a week. It has been operating around the clock ever since. From the first two cruisers with receiving sets, the number grew to eight cruisers and 28 scout cars by 1930. Four years later, with the department handling 279,000 calls a year, two-way sets were introduced.

Radio as an aid to police work was not entirely new in 1928. Detroit, for instance, had been experimenting with it for seven years. Police Superintendent William P. Rutledge had enlisted amateur radio operators in flashing lists of stolen cars around the nation in 1921. Other police administrators made use of "ham" operators for the same purpose.

Detroit's radio station WWJ was broadcasting missing persons bulletins.

Police Lieutenant William L. Potts enthusiastically predicted that "the time is not far off when every patrolman will be equipped with a personal wireless telephone receiving set."

The department opened its first radio station in 1922—station KOP—and equipped an experimental car with a receiver. KOP broadcast on a regular commercial wavelength, and filled in the gaps between police calls with music and weather forecasts. But E. C. Denstaedt,

a pioneer "radio cop" who is now the Detroit department's director of communications, explains, "The art wasn't ready." The station went off the air in 1927.

The next year, on short wave, station W8FS was on the air to stay. Enthusiastic news writers, reporting 20-second arrests a short time later, predicted "the end of successful crime." That hasn't yet come, but fast, radio-equipped police cars have nevertheless served as a strong deterrent.

*Automotive Facts*

### WHY NOT DEVISE REWARD PLANS FOR TECHNICAL MEN?

CLIFFORD A. HAMPEL, *President*

Chicago Technical Societies Council

The improvement of the economic status of scientists and engineers must be approached on two bases, one, an elevation of the general salary level with consistent differentials based upon experience, and two, the establishment of additional financial reward for above-average contributions, such as the invention and development of new products and processes. As would be expected, there are two schools of thought on this latter question.

One holds that technical men are expected to make original contributions and that no specific rewards should be made to those that do so. The other believes that the technical men who make original contributions which can be measured by the amount of new wealth created by their work should share in this financially. Some employers recognize this latter view, and while they are all too few in number, it is to be hoped that their number can be increased.

Several companies have bonus plans which distribute a share of the additional income, created largely by technical personnel, among all employees on a more or less percentage basis. All share proportionately under this scheme regardless of the individual's contribution. A handful operate a reward system which attempts to distribute a share of profits according to the specific contributions made by individuals. While admittedly difficult to establish and conduct, this method is the best of all, and can be operated to take into account the work of those who place and maintain on an income-producing basis the discoveries of the few.

Although space does not permit a full explanation of the details, one large chemical company has for years operated such a reward system rather successfully and while it is not entirely equitable and (perhaps no completely equitable plan can be devised) it has been most rewarding to many of its technical men. As the technical director of one of the company's divisions told the writer several years ago, "Many of the fine new homes of our chemists and engineers in this city were built by funds derived from the bonus system." The system tries to distribute a share of the net earnings from new products over a period of years among the inventor, the research group he worked with, the pilot plant men, and the production men, so that the several varieties of scien-



tific and engineering contributions necessary to translate an idea to tangible income are rewarded over and above the straight salaries received by the technical men.

With their recognized ability for definite thinking it is certain that scientists and engineers could devise bonus systems for themselves that could then be "sold" to management. The advantages of employee profit sharing plans to employers have been widely recognized, as reported by conservative business and financial publications, but in many cases management needs to have presented to it a well-defined plan before it can be induced to establish an equitable reward system.

It would appear that technical societies could study, prepare, and suggest good reward systems by which the widespread feeling that technical men should share to a greater degree in the wealth they create can be reduced to actuality. Many societies have committees on economic status, and these could constructively undertake the preparation of such proposals if persuaded by the society membership. Certainly, definite proposals will merit more attention than nebulous ideas.

—*Sci-En-Tech News*

### PORTABLE TESTING MACHINE

A new Portable Testing Machine announced by Soiltest, Inc. makes possible rapid on-the-job testing of concrete and similar materials with laboratory accuracy.

The 200,000 pound capacity Portable Testing Machine can be used in field and laboratory testing of concrete cylinders and beams and other construction materials. The tester is entirely self-contained and no electrical or pressure connectors are required.

The Testing Machine can be rapidly converted to a 20,000 pound capacity flexure testing machine for beam tests. The flexure attachment includes the transverse beam loading apparatus and a large diameter 20,000 pound capacity direct reading gauge. Beams up to 42 inches in length can be tested and either center or third point loading can be used.

Use of the Portable Testing Machine is not confined to concrete testing. It can be used as a high capacity shop or laboratory press; compression testing machine for castings or small vessels; experimental press for powdered metals work; and as a laboratory testing machine, for all types of routine work on small sized specimens such as ceramic pieces, rock cores, timber and welded sections.

The Portable testing Machine is manufactured and distributed by: Soiltest, Inc., 4520 West North Avenue, Chicago 39, Illinois, USA.

### PRIZE WINNING HIGH SCHOOL EDITORIAL

RODGER WHITE, St. Elizabeth H. S. Student, Chicago

(Written in connection with Careers Conference held at Illinois Institute of Technology)

There are some people who will tell you that by feeling what they call the "bumps" on your head, they can find out what your vocation is. There are others, who by analyzing your handwriting, claim to be able to discover whether you would make a good architect (by long

"l's" indicating "perspective" or flourished "y's" indicating "mathematical ability") or a good engineer.

Most up-to-date teen-agers would have to be rather far "gone" to be taken in by such theories; yet some are. A few even go to fortune tellers! Yet there is one thing in their favor: they know that choosing a career is a serious thing, something that should not be done without help.

This help, though, should come from people who are capable of giving it. Considering the thousands of different occupations which are open to youth today, it is evidently not an easy task to select the one in which we can earn a living, be happy, and make our special contribution to the needs of our fellow men.

In choosing a career, we must start with the raw material—ourselves. In order to know ourselves, we might ask a few questions . . . What subjects did we take while in school? Which did we like the best? In which did we get our highest grades? The answers to these questions will help us know where we best fit into the picture of tomorrow.

Suppose you feel you would like to be an engineer. A little investigation will show that you will need mathematical ability and some background in the physical sciences. Do you have these?

After getting to know ourselves, we next need to get a general picture of the world of occupations, the kind of work people do, the industries that have grown up, those that are declining in importance, and those slated for future expansion.

Some jobs require aptitudes of a specific kind; for example, the musician must be able to keep time and distinguish pitches. Others require skills; the typist must know how to spell. Many require much general education as well as special training. All this has to be taken into consideration.

Psychologists say that one of the most important requirements for any career is a real, sincere interest in the type of work one plans to do. In other words, we must want to do this particular kind of work; we must actually feel that this is what we were made to do. Financial or social reasons alone are not sufficient to determine whether we shall be happy in our chosen field. To be really happy and successful, we must do work that we actually enjoy.

How can we get a look at the general world of occupations? How can we find out the requirements for certain jobs? Where can we get advice? There are many ways, but one of the easiest would certainly be to take advantage of an opportunity such as that offered by the Career Conference on March 20 at the Illinois Institute of Technology. The very purpose of this meeting is to help young people choose careers. Just about every field will be covered, and an array of over a hundred experts will be there to give advice.

If your career lies somewhere in the field of "jobs," this conference is a MUST on your calendar. You won't miss it if you're serious about that future career.

—*Sci-En-Tech News*



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### TESTS SHOW HOW DRIVER AFFECTS FUEL ECONOMY

While the efficiency of engines and fuels has increased approximately 50 per cent in the past 25 years, economical operation of a motor vehicle still depends upon the driver. The truth of this has been amply demonstrated both in factory tests and in numerous independently sponsored economy runs.

Comparison runs recently conducted by test drivers and engineers of an automobile manufacturer showed how much fuel economy can be increased through proper handling.

The drivers found that by adjusting their city driving to the flow of traffic and to the timing of traffic signals, they could cut fuel consumption nearly in half. By lowering open country speeds from 70 to 50 miles per hour, savings of 25 per cent were achieved.

On a 62-mile city test run, one driver moved with the traffic and timed his speed to match the setting of traffic lights. He used a little more than half as much gasoline as another driver who tried to make time and stay out in front of traffic. The careful driver took only three more minutes to cover the distance.

The company's chief engineer of experimental testing said, "our tests show that the driver pretty much determines whether his car will get the fuel economy the engineers have designed into it."

On cars with regular gearshifts, maximum economy was achieved when gears were shifted quickly, rather than after considerable speed had been reached. At 20 miles per hour, for example, low gear gives 35 per cent less fuel economy than high gear.

The following tips on economical driving were passed on by a driver who piloted his car to a first place prize in the Grand Canyon Economy Run last spring:

A light foot on the throttle can save half your gas when starting and shifting gears.

Go easy on the accelerator when the engine is cold. A cold motor uses twice as much fuel as a hot motor because only a small part of the gasoline is completely burned.

Fill the gas tank often—air in the tank mixes with the fuel and leaves moisture which may cause corrosion inside the motor.

Never overload the engine. Come down in gear shift as necessary, avoid surging the throttle and let the motor act as a brake in stops.

Criss-cross tires every 5,000 miles. Keep tire pressure at the exact level—no more, no less.

Use the right oil weight. Incorrect weight can cost as much as seven-tenths of a mile per gallon.

Keep the air filter clean. Change exhaust lines and muffler every 30,000 miles.

Make sure all battery connections are tight and corrosion-free and that brakes are checked every 10,000 miles.

Watch chassis, rear end, and transmission lubrication and have a complete car checkup twice a year.

### CAN TECHNICAL MEN GET SALARIES LIKE EXECUTIVES?

CLIFFORD A. HAMPEL, President  
Chicago Technical Societies Council

It is a fact, fully supported by the data from the many polls of salaries of technical men, that those individuals in administrative positions obtain the highest salaries. Many technical men are somewhat resigned to the view that unless one gets into an administrative position the chances of his receiving a high salary are remote no matter what may be the quality of his contribution to his employer's economic stature.

Now it is evident that not all technical men care to or are qualified by temperament to assume administrative roles even if there were enough such jobs to go around. Are those technical men who are in the majority then to be relegated forever to secondary salary status simply because they do not achieve the relatively few executive positions? That the answer need not be "Yes" is evidenced by the action of a few industrial concerns who have set up salary levels for their research and development technical men to match those of executives even though the former have no administrative responsibility.

The outstanding local example of this system is Standard Oil Co. (Indiana) which has created a system of technical positions that match in prestige and salary those in the supervisory sequence of positions. This is more than giving the rank of "senior scientist" (or chemist or engineer, etc.) to a few men of outstanding ability. According to Morris Carpenter, administrative director of research for Standard Oil, as quoted in *Chemical Week*, p. 20, Feb. 20, 1954, the system is a vertical counterpart of the supervisory scale of positions and allows the technical man to rise in rank and salary status as he progresses in his career without having to become an administrator.

The value to technical men of such a system is immediately apparent. It should and could be introduced by



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both large and small employers of technical men with great benefit to all parties concerned.

In the campaign to induce management to establish a system of promoting and paying scientists and engineers on a scale comparable to that used for supervisory positions the technical societies can assume a vital and strategic role. The campaign is primarily one of education and of making management aware of the feelings of large cross-sections of technical men that comprise the memberships of technical societies. Such an activity by technical societies certainly is not afieid from the one common to most of promoting professional stature, and would meet the all too frequent criticism that societies are too concerned with the profession and not enough with the status of the individuals which comprise them.

With such an outstanding example before us, let's go

after our technical societies to become active in spreading such a program to an ever increasing number of enlightened employers.

*Sci-en-tech News.*

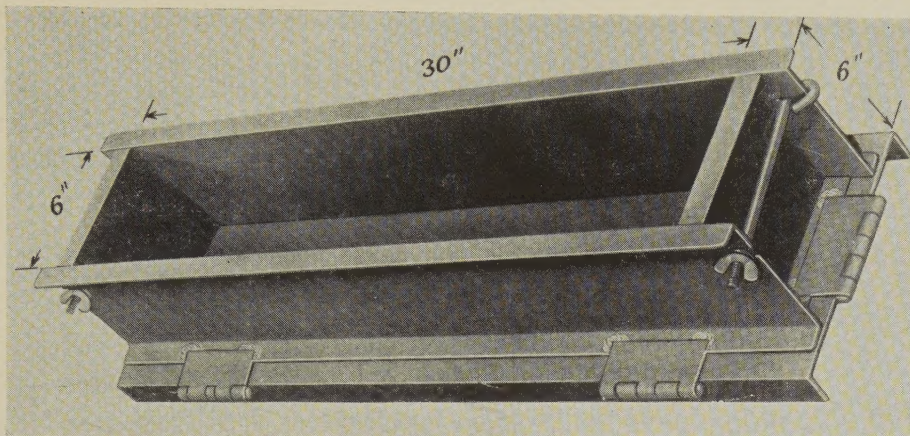
The lazy and idle and bickering man does not count in the progress of this nation.

— John Burroughs.

I hold every man a debtor to his profession; from the which as men of course do seek to receive countenance and profit, so ought they of duty to endeavor themselves by way of amends to be a help and ornament thereunto.

Sir Francis Bacon





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—Managers' Handbook



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### OVER THE MANAGER'S DESK DECEMBER 1954

*December is when we all like to stop our daily work and think of our friends and business associates. Engineering Societies Personnel Service, Inc., is no different than others. We of the Chicago Staff wish you and yours a VERY MERRY SHRISTMAS.*

Bonnell H. Allen

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**Off. Engr., CE, 30.** Five and one half yrs. designing and drafting structures, sewers, earthwork, and takeoff and estimates. Chgo. \$430. 17-PE

**Designer, MSME, 32.** Fourteen mos. charge of specification dept. Six yrs. design draftsman on heating, ventilating and air conditioning equipment. \$8000. Chicago. 18-PE

**Designer, ME, 28.** Two and one half yrs. design and drafting of central steam power plants, heating and ventilating systems and servicing facilities. \$6000. Chicago. 19-PE

**Prod. Engr., Ind. Eng., 26.** Twenty-nine mos. liaison engr. in electronics coordinating engineering production, advertising, manufacturing and govt. contracts. Twelve mos. doing liaison work and writing technical manuals with an aircraft company. \$6000. Chicago. 20-PE

**Off. Mgr., ME, 34.** Forty-two mos. sales, engrg. and office administration work in metal products. Four and one half yrs. Jr. design engr. on ventilating and steam systems. \$6000. Chicago. 21-PE

**Asst. Engr., CE, 65.** Nineteen yrs. supervision of supply and flow of material for annual maintenance programs. Nine yrs. field and office work for R.R. \$4000. Chicago. 22-PE

**Ind. Mgmt. Engr., Mgmt., 38.** Six yrs. responsible for operation of all plant facilities. Two yrs. establish job and cost standards from methods analysis and time study. Four yrs. Sr. Ind. Engr. on cutting tools. \$9000. Midwest. 23-PE

**Methods Engr., ME, 34.** Three yrs. methods, time studies, layouts, specifications on auxiliary eqpt., product design and estimates. One yr. supervision of military personnel. \$4800. Chicago. 24-PE

**Chief Engr., CE, 32.** Six and one half yrs. supervisor of engineers, draftsmen and clerical personnel for chemical plants. Fourteen mos. engineering and drafting for refinery. One yr. instructor. \$9600. Midwest. 25-PE

**Plant Engr., 35.** Ten yrs. Supervised design and installation of plant services and pro-

duction equipment. Four yrs. design engineer for industrial and marine machinery. Eighteen mos. valve design, piping layouts and general drafting. \$8000. Midwest. 26-PE

**Chief Engr., ME, 42.** Twelve yrs. chief engineer for a forging manufacturer. Eight yrs. charge design, construction, maintenance and operation of steam plants for R.R. Four yrs. student engr. in efficiency dept. of power plants. \$10,000. Midwest. 27-PE

**Field Engr., CE, 28.** Nine mos. field layout for construction company. Three mos. testing sand and gravel. Two yrs. moving and erecting machinery. \$4500. Chicago. 28-PE

**Editor, MS, Chem. Eng., 33.** Eleven mos. preparation and editing of news and feature articles. Two yrs. direction of research projects and report writing for food canning. Four yrs. research and dev. on building materials. \$7000. Chicago. 29-PE

**Test Engr., EE, 42.** Sixteen yrs. charge of relay testing, substation construction test and field testing. \$8000. Midwest. 30-PE

**Mining Engr., EM, 27.** Fourteen mos. supervising rock asphalt mining operation including screening and mixing plants. Fourteen mos. iron ore strip mining. Twenty-four mos. chief of party on civil engrg. work for major canal. \$6000. Midwest. 31-PE

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**Production Process Engineer, Degree or equiv.** Age: 25-55. 4 plus yrs. exp. in production process experience in both fusion (inert gas shield arc) and in resistance (spot and seam welding) experience in the use of three phase resistance welding equipment. Fusion and resistance welding. Duties: determining the need for functional tooling and equipment necessary for this type of processing. For mfg. of jet engines. Sal.: \$500 up. Location: Chicago. C-2181(b)

**El. Distribution Engineer, Recent Grad. or better.** Knowledge of electrical power distribution. Duties: field layout work and

drafting on electric utility distribution problems. For firm of general engineers. Employer will negotiate fee. Location MO. C-2204

**Electrical Designer, EE.** Age: 25-30. 1 plus yrs. exp. in drafting or design of electrical equipment. Knowledge of power and preferably switchgear. Duties: training for position as Chief Draftsman in about two yrs. For a manufacturer of electrical equip. Sal.: Up to \$450 mo. Employer will pay fee. Location: Chicago. C-2207

**Manufacturing Executive, ME.** Age: 35-45. 5 plus yrs. exp. in heavy machining, welding and fabricating heavy metal products. Knowledge of production and modern management. Duties: supervision of 35 foremen, most of whom are 10-20 yr. employees in mfg. heavy equip. such as lift trucks, covering welding, electrical assemblies, machining and floor assembly operations. For a mfg. of material handl. equipment. Sal.: \$9-15,000 dep. on exp. Employer will negotiate fee. Loc.: Chicago. C-2315

**Chemical Engineer—Chem. Eng. or Chem.** 10 plus yrs. exp. in production and laboratory work on finishes. Knowledge of paint plant processes and equipment. Duties: head dispersion and new equipment evaluation laboratory for material paint, enamel and lacquer manufacture. Will be member of Chicago office general staff but will live in Detroit. For a paint manuf. Sal.: open. Location: Michigan. C-2324

**Sales, ME or EE training.** Age: 25-30. 1 plus yrs. exp. in sales calling on industrial or R.R. preferably G.E. or Westinghouse or similar training. Knowledge of rotary equipment helpful. Duties: calling on industrials railroads, O.E.M.'s and others selling line of carbon brushes, bearings and seals. For a manufacturer. Sal.: \$6000 or better. Some traveling—usually home weekends. Car required. Location: St. Louis. C-2326

**Sales—Casters, Engrg. Deg.** Age: 22-35. 2 plus yrs. exp. in sale of mechanical products through distribution. Duties: sell full line of casters through distributors. For a manufacturer of casters. Salary: \$5000 to \$7000 to start, then drawing and commission. Location: United States. C-2327

**Sales Aircraft Accessories, ME or AE.** Age: 30-45. 4 plus yrs. exp. in sales to aircraft industry. Duties: sell line of gasoline fired heaters, heat exchangers and related products to aircraft industry. For a mfg. of heaters. Salary: up to \$575 per mo. dep. on exp. Loc.: Ind. C-2334(b)